

What is claimed is:

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1. ~~A method of compressing information indicative of a three dimensional surface, comprising:~~

5 determining a function which approximates some aspect of the surface; and

defining the surface in terms of one scalar per point relative to said function.

10 2. A method as in claim 1, wherein said defining comprises defining a coarse representation and subsequently increasing a resolution of the coarse representation to a finer representation.

15 3. A method as in claim 2, wherein coefficients of the finer representation are all scalar functions.

4. A method as in claim 2, wherein coefficients of the finer representation confine a residual area to a normal  
20 direction of said surface.

5. A method as in claim 1, wherein said surface is defined by a parametric function.

6. A method as in claim 1, wherein said surface is defined by a polyline.

7. A method as in claim 6, wherein said polyline has a normal component representing geometric information and a tangent component representing parameter information.

8. A method as in claim 6, wherein said polyline is defined as a function such that it can be described as one scalar per point of the polyline.

9. A method as in claim 8, wherein said polyline is substantially normal to said surface.

10. A method as in claim 9, wherein said polyline forms a isoceles triangle with neighboring line segments.

11. A method as in claim 6, wherein said polyline is a normal polyline to a surface.

12. A method as in claim 6, wherein said polyline is an approximation to a normal polyline to a surface.

13. A method of compressing a representation of a surface, comprising:

forming a plurality of triangles which are normal triangles and which have vertices that are defined by a base point in a normal direction; and

using said triangles to form a mesh that represents a surface.

~~13~~ <sup>14</sup> A method as in claim 12, wherein said mesh is semiregular, having an connectivity formed by successive quadrisection of coarse base domain phases.

~~14~~ <sup>15</sup> A method of forming a model of a three dimensional object, comprising:

forming a coarsest version of the model;

forming a plurality of curves which do not intersect one another, and which start and finish at vertices defining a base domain;

determining non-normal vertices and repositioning said vertices to maximize a number of normal vertices, and using said information to form a normal mesh.